

Product Description

- The 0402 SMD LED is much smaller, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- These LEDs have high reliability performance and are designed to work under a wide range of environmental conditions.
- Besides, lightweight makes them ideal for miniature applications. etc.

Features

- Size(mm): 1.1*0.5*0.4mm
- Compatible with automatic placement equipment
- Moisture Sensitivity Level: 3
- Color type: White
- Viewing Angle:120°
- Pb-free
- RoHS and REACH compliant

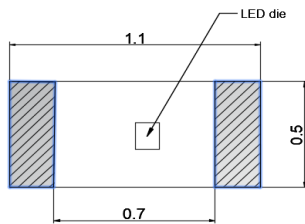
Applications

- Backlighting in dashboard and switch.
- Digital display for household appliance
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD
- General use

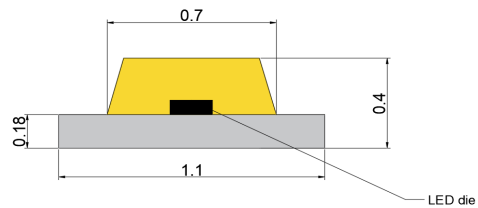
MECHANICAL DIMENSIONS

All dimensions are in mm.

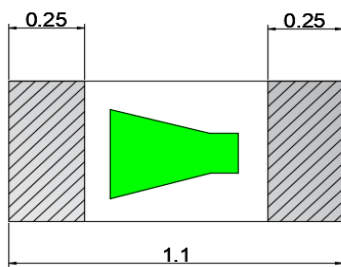
Top View



Side View



Back View



Circuit Diagram



Remark

The tolerance of all dimensions above is 0.1mm.



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}\text{C}$)

Items	Symbol	Absolute Maxium Rating	Unit
Forward current	I_F	20	mA
Peak Forward Crurrent	I_{FP}	60	mA
Reverse voltage	V_R	10	V
Power dissipation	P_D	100	mW
Operating temperature	T_{opr}	-40 ~+85	$^{\circ}\text{C}$
Storage temperature	T_{stg}	-40~+100	$^{\circ}\text{C}$

Remark: 1/10 Duty cycle, 0.1ms pulse width.

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS ($T_A = 25^{\circ}\text{C}$)

Charateristics	Symbol	Condition	Unit	Minimum	Typical
Forward Volatge	V_F	$I_F=5\text{mA}$	V		2.8
Reverse Current	V_R	$V_R=5\text{V}$	μA		<1
Viewing Angle	$2\theta_{1/2}$	$I_F=5\text{mA}$			120
Luminous intensity	I_V	$I_F=5\text{mA}$	mcd	210	
Spectral Line Half-Width	$\Delta\lambda$		nm		15
Chromaticity Coordinate	x	$I_F=5\text{mA}$			0.27
	y	$I_F=5\text{mA}$			0.28
Color Temperature	CCT	$I_F=5\text{mA}$	K	8513	

* Continuous reverse voltage can cause LED damage.

INTENSITY BIN LIMIT

White (5mA)		
Bin code	Min.(mcd)	Max.(mcd)
PM1	210	250
PM2	250	300
PM3	300	360
PM4	360	430

*Tolerance of measurement of luminous intensity is $\pm 10\%$.



VOLTAGE BIN LIMIT

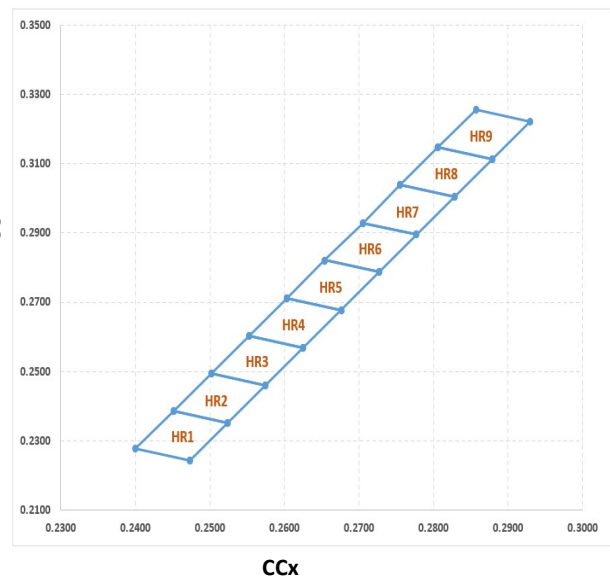
White (5mA)		
Bin code	Min.(V)	Max.(V)
PV1	2.6	2.7
PV2	2.7	2.8
PV3	2.8	2.9
PV4	2.9	3.0

*Tolerance of measurement of voltage is $\pm 0.05V$.

CHROMATICITY DIAGRAM

Bin Code	CCT(K)	CCx	CCy
HR1	25174-35677	0.2473	0.2243
		0.2400	0.2277
		0.2451	0.2386
		0.2524	0.2352
HR2	19459-25174	0.2524	0.2352
		0.2451	0.2386
		0.2502	0.2494
		0.2574	0.2461
HR3	15967-19459	0.2574	0.2461
		0.2502	0.2494
		0.2553	0.2603
		0.2625	0.2569
HR4	13629-15967	0.2625	0.2569
		0.2553	0.2603
		0.2603	0.2712
		0.2676	0.2678
HR5	11992-13629	0.2676	0.2678
		0.2603	0.2712
		0.2654	0.2821
		0.2727	0.2787
HR6	10779-11992	0.2727	0.2787
		0.2654	0.2821
		0.2705	0.2929
		0.2777	0.2896
HR7	9847-10779	0.2777	0.2896
		0.2705	0.2929
		0.2755	0.3038
		0.2828	0.3004
HR8	9110-9847	0.2828	0.3004
		0.2755	0.3038
		0.2806	0.3147
		0.2879	0.3113
HR9	8513-9110	0.2879	0.3113
		0.2806	0.3147
		0.2857	0.3256
		0.2929	0.3222
		0.2473	0.2243

CCy

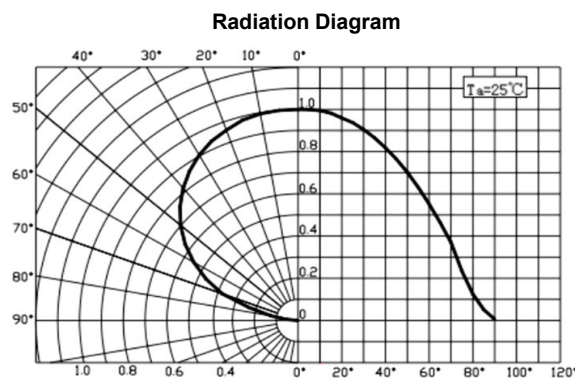
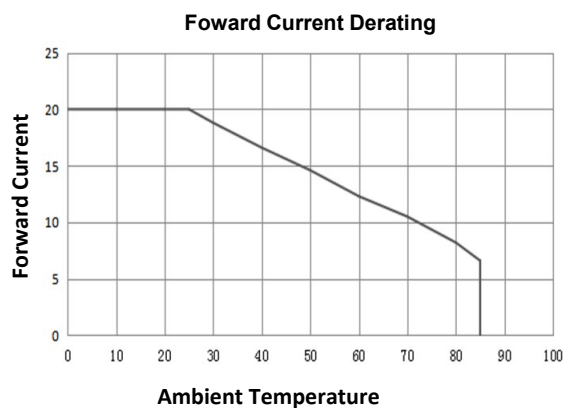
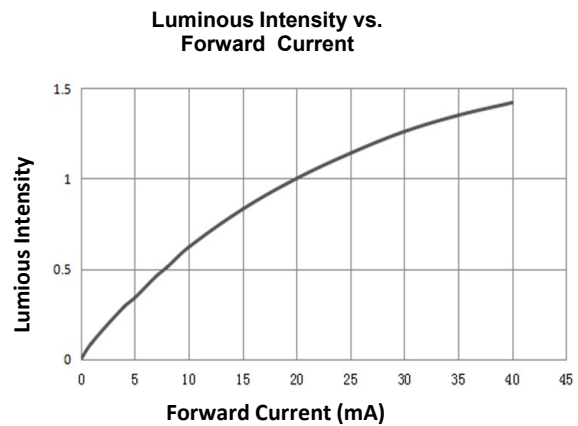
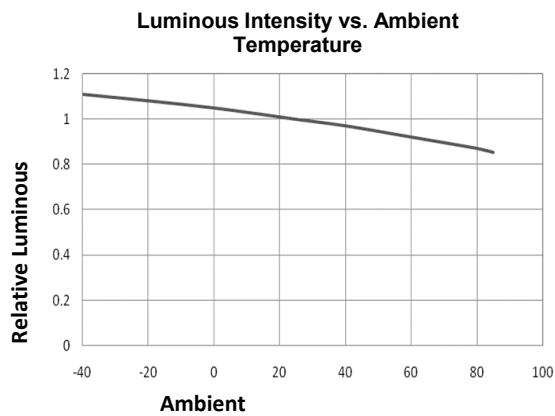
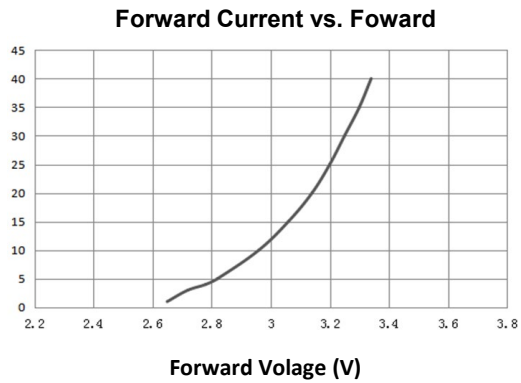
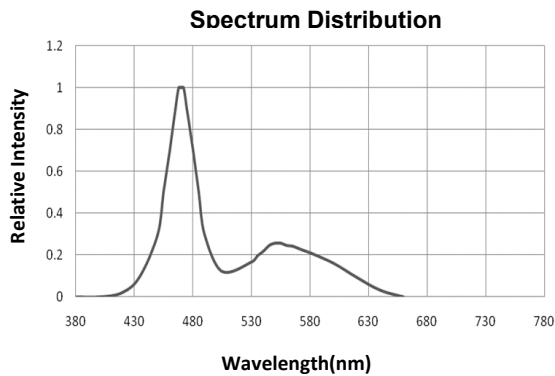


*Tolerance of measurement of the color coordinates is ± 0.005



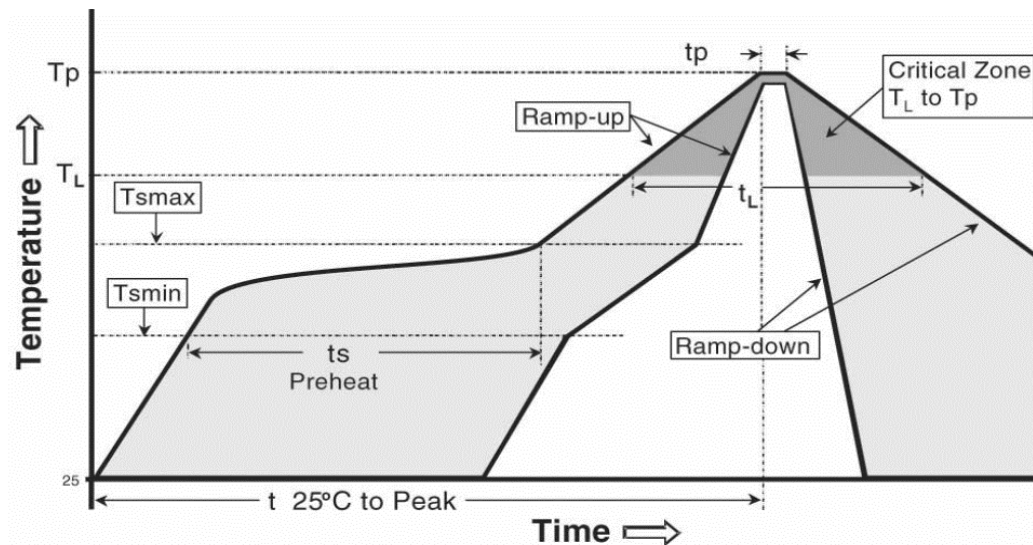
TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURES($T_a=25^{\circ}\text{C}$)

The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.



REFLOW SOLDERING

- The CHIP LED is rated as a MSL3 as general request product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.



IPC/JEDEC J-STD-020C

Profile Feature	Pb-Free Assembly
Average ramp-up rate(Tsmax to Tp)	3°C/second max.
Preheat	
- Temperature Min(Tsmin)	150°C
- Temperature Max(Tsmax)	200°C
- Time(Tsmin to Tsmax)	60-180 seconds
Time maintined above	
- Temperature(T _L)	217°C
- Time(T _L)	60-150 seconds
Peak Temperature(Tp)	260°C
Time within 5°C of actual peak Temperature(tp) ²	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to peak Temperature	8 minutes max.



Moisture Sensitivity

- Beking recommends keeping CHIP LEDs in the provided, resealable moisture-barrier packaging (MBP) until immediately prior to soldering. Unopened MBPs that contain CHIP LEDs do not need special storage for moisture sensitivity.
- Once the MBP is opened, CHIP LEDs may be stored as MSL 3 per IPC/JEDEC J-STD-020C, meaning they have one year of floor life in conditions of $\leq 30\text{ }^{\circ}\text{C}/60\%$ relative humidity (RH). Regardless of the storage condition, Beking LED recommends sealing any unsoldered CHIP LEDs in the original MBP.

Handling

- The packaging sizes of these SMD products are very small. Users are required to handle with care.
- To avoid damaging the product's surface and interior device, it is recommended to choose a

Repairing

Repair should not be recommended after SMT production. When repairing is needed, a double-head soldering iron should be used (as below figure). It should be assured before handing whether the electrical and optical characteristics of the LEDs will or will not be damaged by

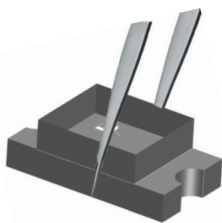


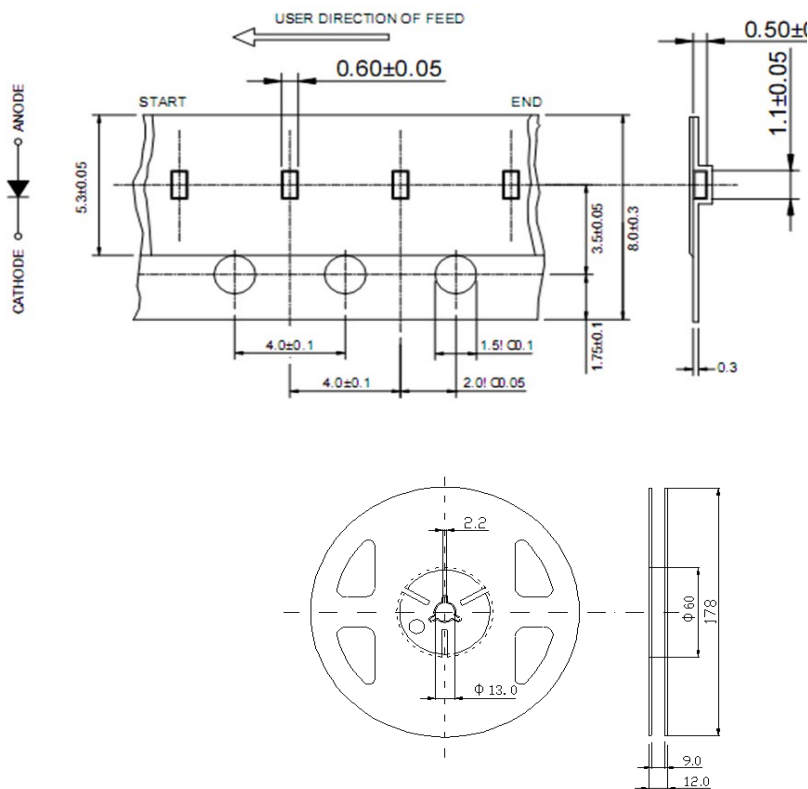
Fig.1 Pickig up a LED using an tweezer with care



Fig2. Repairing using a double-head soldering iron

PACKING

Carrier Tape Dimensions: Loaded quantity 3000pcs per reel.



All dimensions are in millimeters.

Tolerance of measurement of all dimensions is $\pm 0.1\text{mm}$

